

CLAIMS

1. Antenna arrangement (1, 1', 1'') for transmitting and receiving electromagnetic signals, the antenna arrangement (1) comprising:
  - a flat carrier substrate (2) made of dielectric material,
  - a first conducting track (32, 320, 320') applied to a surface of the carrier substrate (2), the first conducting track possessing at one end a point of contact so as to gather thereat or inject thereat the signals and a first dipole (50, 51) at the opposite end,
  - a second conducting track (42) applied to the other surface of the carrier substrate (2),
  - the second conducting track (42, 420, 420') possessing at one end a point of contact so as to gather thereat or inject thereat the signals and a second dipole (60, 61) at the opposite end,
  - the first and the second dipoles (50, 51, 60, 61) forming a crossed dipole.
2. Antenna arrangement (1, 1', 1'') according to Claim 1, characterized in that a  $\lambda/4$  transformer (7) is disposed between the dipoles (50, 51, 60, 61) and the conducting tracks (32, 320, 320', 42, 420, 420').
3. Antenna arrangement (1, 1', 1'') according to one of Claims 1 or 2, characterized in that the zone of the conducting tracks (32, 320, 320', 42, 420, 420') which is linked to a  $\lambda/4$  transformer (7) is embodied in the form of a strip line (31).
4. Antenna arrangement (1, 1', 1'') according to Claim 3, characterized in that the conducting tracks (32, 320, 320', 42, 420, 420') between the strip line (31) exhibit different widths.

5. Antenna arrangement (1, 1', 1'') according to Claim 4, characterized in that a transition line with gradual adaptation of the width is disposed between the asymmetric lines (32, 320, 320', 42, 420, 420') and the  
5 strip line (31).

6. Antenna arrangement (1, 1', 1'') according to one of the preceding claims, characterized in that a conducting track acting as shielding line (8, 80, 9,  
10 90) is disposed above the first conducting track (320, 320') and below the second conducting track (420, 420').

7. Antenna arrangement (1, 1', 1'') according to one  
15 of the preceding claims, characterized in that the conducting tracks (32, 320, 320', 42, 420, 420', 7, 8, 80, 9, 90) are made of copper.

8. Antenna arrangement (1, 1', 1'') according to one  
20 of the preceding claims, characterized in that the carrier substrate (2) is a flexible film, preferably made of polyimide.

9. Antenna arrangement (1'') according to one of the  
25 preceding claims, characterized in that an electronic circuit (10) intended to convert the high-frequency signal signals into lower-frequency signal signals is disposed on the carrier substrate (2).

30 10. Glazing furnished with an antenna arrangement according to one of Claims 1 to 9, characterized in that the glazing is an essentially transparent monolithic pane and the antenna arrangement is disposed on the glazing.

35 11. Glazing according to Claim 10, characterized in that the glazing is furnished with a coating or with a layer reflecting electromagnetic waves, and the zone of the antenna arrangement containing the dipoles is

disposed further towards the outside than the said reflecting layer.

12. Glazing (100) furnished with an antenna  
5 arrangement (1) according to one of Claims 1 to 9,  
characterized in that the glazing is an essentially  
transparent multilayer pane and the antenna arrangement  
(1) is fixed on the glazing.

10 13. Glazing (100) according to Claim 12, characterized  
in that the glazing is furnished with a coating or with  
a layer reflecting electromagnetic waves and the zone  
of the antenna arrangement (1) containing the dipoles  
(50 to 61) is disposed further towards the outside than  
15 the said reflecting layer.

14. Glazing (100) furnished with an antenna  
arrangement (1) according to one of Claims 1 to 9,  
characterized in that the glazing is an essentially  
20 transparent multilayer pane and at least a part (16) of  
the antenna arrangement (1) is disposed between two of  
the layers (101, 102) of the glazing.

15. Glazing (100) furnished with an antenna  
25 arrangement (1) according to one of Claims 1 to 9,  
characterized in that the glazing is an essentially  
transparent multilayer pane, which is furnished with a  
coating or with a layer reflecting electromagnetic  
waves (103) and the zone (16) of the antenna  
30 arrangement (1) containing the dipoles is disposed  
between the coating or the reflecting layer and the  
internal face of one of the layers (101) of the  
glazing, the so-called external layer, and intended to  
be the outermost.

35

16. Glazing according to one of Claims 10 to 15,  
characterized in that:

- the zone of the antenna arrangement with the dipoles is mounted on one of the free main surfaces of the glazing,
  - the zone of the antenna arrangement with the points of contact intended to gather and/or to inject the signals is mounted on the other main surface of the glazing and
  - the carrier substrate is passed around the peripheral surface of the glazing.
- 10 17. Glazing (100) according to one of Claims 14 or 15, characterized in that
- the zone (16) of the antenna arrangement (1) with the dipoles (50, 51, 60, 61) is disposed between
  - 15 two of the layers (101, 102) of the glazing,
  - the zone (17) of the antenna arrangement (1) with the points of contact intended to gather and/or to inject the signals is mounted on one of the two free main surfaces of the glazing (102), and
  - 20 - the carrier substrate (2) is passed around the peripheral surface of at least one of the layers (102) of the glazing.
- 25 18. Glazing (100) according to one of Claims 16 or 17, characterized in that the peripheral surface of the glazing or at least one of its layers, in the zone of the contact with the carrier substrate (2), is furnished with a hollow or with a recess (105) with respect to the continuous edge.
- 30 19. Glazing according to Claim 18, characterized in that the circuit components disposed on the carrier substrate are housed while being protected in the space of the hollow or of the recess.
- 35 20. Glazing according to one of Claims 18 or 19, characterized in that the hollow or the recess is filled with a sealing mass.